

6.4 Demand Management Program

introduction

This section describes a travel demand management program which is essential to successful achievement of the City's transportation goals and objectives.

The Institute of Traffic Engineers has defined "transportation demand management" as:

In its broadest sense, demand management is any action or set of actions aimed at reducing the impact of traffic by influencing people's travel behavior. A comprehensive demand management strategy involves:

- one or more alternative modes and/or services;
- a set of incentives intended to induce commuters to shift to the alternative modes and/or services;
- growth management policies designed to maintain a balance between transportation demand and transportation facilities; and,
- an implementation mechanism.

(A Toolbox for Alleviating Traffic Congestion, ITE, Washington, DC, 1989.)

Other definitions have been written, including many which do not limit the coverage to "commuters" and commuting travel.

The concept of managing demand for infrastructure is not new. During the last three decades, our utility industries recognized that they were following an inappropriate and inevitably unsuccessful long-term strategy. Specifically, they (electric power in particular) were struggling to create new supply in response to rising demand. This new supply was being built at tremendous cost which would ultimately be passed through to consumers (to

their great dissatisfaction).

Out of this realization came an alternative strategy: managing demand through programs to increase consumption efficiency and to price the product in a manner that discourages usage during peak periods. These efforts have been successful, with reduced per capita consumption and billions of dollars in cost savings.

These same principles are applicable in transportation, where rising demand cannot be met entirely - or even primarily - through continued construction of new high-cost infrastructure supply.

For purposes of the Transportation Master Plan, demand management is defined as:

"a coordinated strategy of policies and programs intended to reduce auto dependence in general and single-occupant driving in particular - both within Boulder and throughout the Boulder region."

Note that this is a broader definition than the definition of "regulatory demand management" which is: "**policies and programs that impose requirements for reduced SOV travel.**"

As outlined in the introduction to chapter 6, there are eight program tools potentially available for achieving transportation goals:

- investment in alternative modes;
- incentives and marketing;
- regulatory demand management;
- urban design;
- education and enforcement;
- partnerships;
- market-based strategies; and,
- telecommuting and tele-travel.

This section outlines the basis for Boulder's demand management program and describes key elements of implementing this program.

implications of travel forecasts

The traffic forecasts described in Chapter 5 offer quite different versions of possible Boulder futures for Boulder roads and streets.

The high-traffic, congested-street future implied by Scenario A would be unpleasant not only for drivers of cars, but also for bicyclists and pedestrians. Increased cut-through traffic on neighborhood streets would bring negative impacts to homes and yards as well.

figure 6-32. traffic and congestion in 2020

scenario A	scenario D
<p>Traffic</p> <p>Traffic on most major roadways would increase by 50 to 100%. Spillover and cut-through traffic on neighborhood streets would be much higher.</p> <p>Congestion</p> <p>About 60% of Boulder arterial and collector streets would operate at level of service F. A trip from Violet to Greenbriar on Broadway would require 33 minutes at peak, up from 18 minutes today.</p> <p>External Vehicles</p> <p>The number of motor vehicles entering Boulder from East Boulder County and Denver each day would double.</p> <p>Daily Vehicle Miles</p> <p>Daily VMT within Boulder Valley would increase by nearly 80%.</p> <p>Infrastructure Needs</p> <p>Congestion and traffic problems associated with this scenario could not be resolved through additional construction. Roadway needs alone would be at least \$100 million higher than in the “plan” scenario.</p> <p>Other</p> <p>Even with increased supply, downtown parking would be a serious problem. Parking supply in Boulder Valley Regional Center would have to be greatly increased.</p> <p>Heavy traffic would discourage walking and bicycling and reduce transit performance.</p>	<p>Traffic</p> <p>Traffic on most major roadways would average about the same as in 1994. Traffic on some routes into Boulder would increase 10 to 20%.</p> <p>Congestion</p> <p>Less than 20% of Boulder arterial and collector streets would operate at level of service F. A trip from Violet to Greenbriar on Broadway would require 18 minutes at peak, about the same as today.</p> <p>External Vehicles</p> <p>The number of motor vehicles entering Boulder from East Boulder County and Denver each day would increase by 20%. Local vehicle trips would actually decrease.</p> <p>Daily Vehicle Miles</p> <p>Daily VMT within Boulder Valley would be at today’s levels.</p> <p>Infrastructure Needs</p> <p>Infrastructure needs associated with this plan exceed forecast revenues. Primary unfunded needs would include maintenance of deteriorating roadways and expansion of bike and pedestrian facilities and transit services.</p> <p>Other</p> <p>The demand for parking in downtown would be about the same as today. Parking demand in BVRC would increase but could be accommodated with existing supply.</p> <p>The amount of daily walking, bicycling and transit ridership would be 240% of 1994 levels.</p>

Since the future described in the right half of Figure 6-32 would be clearly preferable for most residents, a pertinent question is: what is required to achieve the more desirable future associated with Scenario D? At least part of the answer is: a substantial change in travel behavior of Boulder's residents and commuters.

- second, a reduction in single-occupant vehicle tripmaking from 44% of trips today to 40% in 2000 and to 25% in 2020 represents a more difficult set of objectives than the original TMP objective of a 15% shift.

figure 6-33. reevaluation of effort required

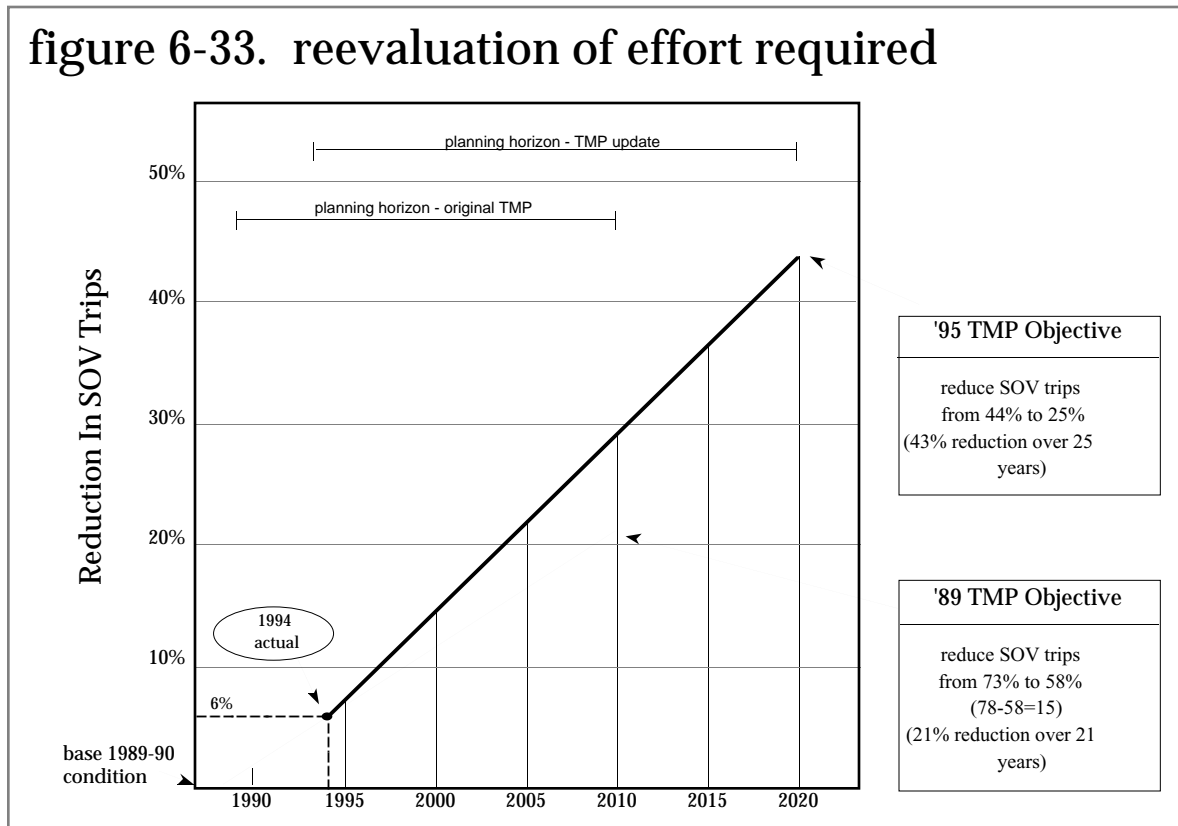


Figure 6-33 compares the original 1989 objective of a 15% reduction in single-occupant vehicle travel with the reduction required to prevent long-term growth in traffic.

Two facts about this required change in travel behavior should be noted:

- first, the next five years of shifting single-occupant vehicle mode share may be more difficult than the first five years has been; and,

Figure 6-33 displays graphically how the reduction in single-occupant vehicle travel required to prevent traffic growth is a steeper challenge than that proposed by the 1989 TMP.

In addition to the fact that a “no traffic growth” objective is more ambitious than the objective of a 15% reduction in single occupant vehicle travel, the steeper line is also due in part to regional growth trends which are increasing traffic throughout the region.

Overcoming the underlying regional trends requires greater change in travel behavior than would be required if this regional growth did not occur. However, there is no indication that regional growth management in the future will prevent regional traffic growth. If Boulder is to meet its transportation objectives, it must become more active and effective in regional policy settings to help bring this about.

Because one key to securing a future more like Scenario D is a substantial shift in travel behavior, the City will need to resolve some important questions, including:

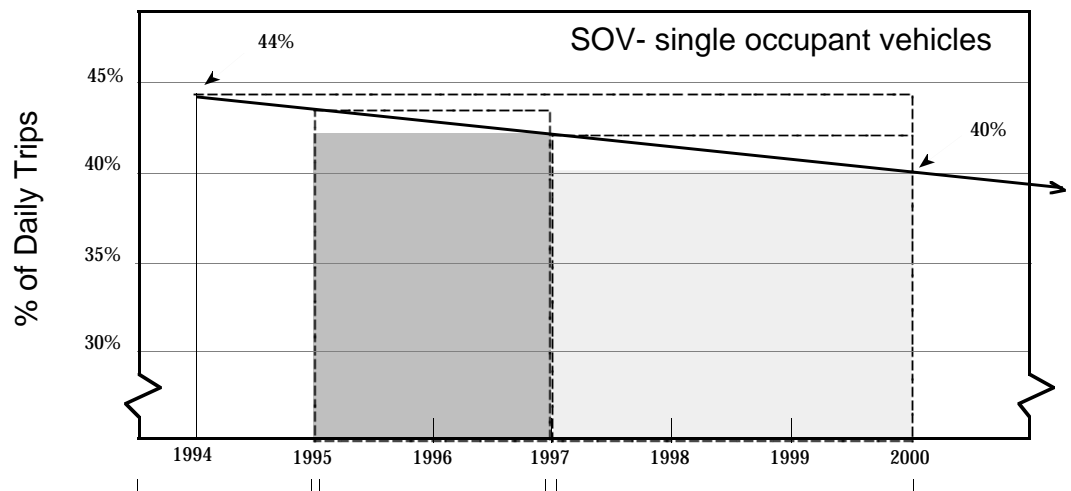
- To what extent do Boulder's residents feel their City government is responsible for bringing about a more desirable future?
- What kinds of policies or programs would be adequate to accomplish such a shift in travel behavior?
- Which of these policies or programs would Boulder's residents find acceptable?

These are fundamental public policy questions which must be resolved over the next two years through extensive public discussion.

As the TMP Update is being completed, the City of Boulder is undertaking an important project to determine what approaches to resolution of the traffic growth and congestion problem would enjoy the most public support.

This "Congestion Relief Project" has begun in 1995 and will be completed by the end of 1997. It will initiate and manage an extensive public conversation about traffic, congestion and other mobility-related issues. One result of this work will be a much better understanding of which demand management policies, including price-based measures, hold the most promise for achievement of the City's objectives.

figure 6-34. five-year stepped implementation



Second stage: implement results of congestion relief
 Interim program: increased demand management
 Existing program: as set by original TMP -- voluntary/incentive-based

Because this important project is underway, the TMP Update will identify only those policies which could be considered for implementation during the next two years. Further actions can then be taken in 1997 or 1998 as a result of the Congestion Relief Project. This “stepped approach” is diagramed in Figure 6-34.

existing programs

As a starting point, the City can build on the successful demand management measures employed during the past five years. Figure 6-33 on page 6-51 shows that a six percent reduction in single occupant vehicle use has been achieved since 1989. Much of this can be attributed to the marketing and educational efforts employed through GO Boulder’s demand management programs.

GO Boulder’s marketing and education programs have had great success over the past five years in communicating the transportation options which are available as an alternative to single-occupant-vehicle use and in increasing support for alternative mode use at the work place. These programs address two important barriers to alternative mode use which are:

- one, that people are often not aware of the alternatives available to them; and
- two, that employees may not feel that their work environment supports alternative mode use.

Key elements of success have been the Eco Pass and other pass programs, the HOP, the Employee Transportation Coordinators (ETCs) program, improvements to bicycle and pedestrian networks, marketing events such as “Bike Week,” youth-related education programs, and the provision of readily accessible information on the transportation system.

The City will continue to develop partnerships and to seek new opportunities to expand on the

Eco Pass and other pass programs. As noted in section 6.3, the Eco Pass serves to minimize the barriers to transit use by eliminating the need for the user to carry exact change. The HOP is another program which reduces the barriers to transit use by eliminating the need for users to have access to route schedule information. GO Boulder’s marketing efforts further served to make the HOP as successful as it has been by familiarizing the public with the HOP service.

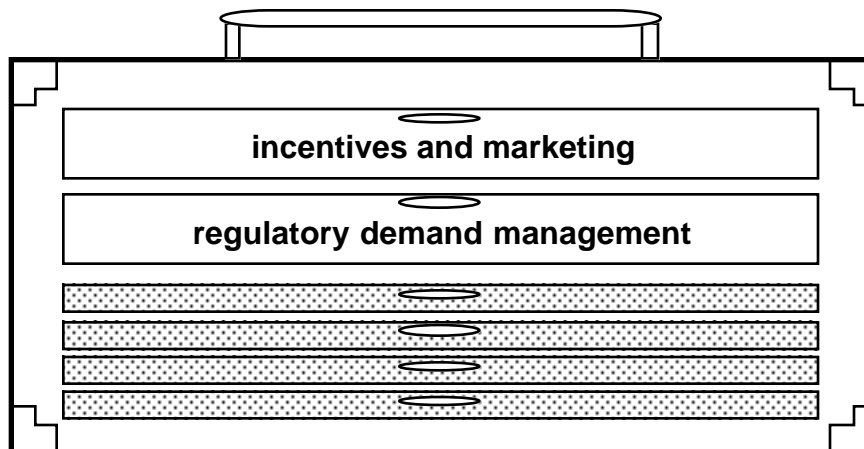
The Employee Transportation Coordinator (ETC) Network has provided the City with an avenue to make information on a wide range of transportation options available at the workplace and to encourage employer support of alternative modes. Through this program, the City assists employers in establishing an employee transportation coordinator (ETC) whose job is to disseminate information on the alternative modes within the work place.

As discussed in Sections 6.1 and 6.2, a number of improvements have been made to both the bicycle and pedestrian systems. In addition, marketing efforts such as “Bike Week” have helped to inform the public of the bicycle system and to encourage the use of the bicycle as a mode of transportation.

In addition, the City has initiated its own demand management program to encourage City employees who work downtown to use alternative modes. This program combines parking fees with the provision of additional incentives for alternative mode use.

Continuation and acceleration of these efforts will be priorities of the City.

While these programs have helped citizens become more aware of the transportation options available to them, additional demand management strategies and programs will be necessary to help the City meet the objective of maintaining traffic at today’s levels.



Public transit riders in the Denver Region pay less than 40% of the full cost of transit equipment and services through fares and purchase of passes. Bicycles and pedestrians in Boulder pay no direct usage-based fees or taxes for the systems they utilize.

Automobiles fund less than half of the cost of building, operating and maintaining

potential future demand management programs

During the public process associated with the TMP Update, two policy areas were often urged by citizens interested in avoiding a Scenario A future. These were:

- improved bicycle and pedestrian systems; and,
- parking strategies including pricing and supply limitations.

There was also a feeling among some of those participating in the TMP Update that Boulder should reduce the subsidization of auto travel, and that increasing the cost of parking is one potential way of accomplishing this end.

A public “subsidy” exists where the users or beneficiaries of a public facility or service do not pay full costs of providing that facility or service. Instead, a portion of the costs are provided through general taxation or fees which are not directly associated with usage.

By this definition, personal travel in the United States (by all modes) has been heavily subsidized by federal, state and local governments. This has been general public policy since the early part of the century.

roadways. The rest of the public cost is funded by general taxation - primarily property and sales taxes. In addition, automobiles produce significant, negative external costs which are borne by society as a whole.

Of course, while the percentages of subsidization of various modes is important, in terms of total dollar investment, the subsidization of auto travel is by far the greatest followed by transit subsidies. The amount of bike and pedestrian subsidy is correspondingly much smaller.

Because travelers pay less than the full cost of their travel, their marginal costs of travel are lower than they would be if they were assessed the full costs associated with their travel habits and choices. This encourages increased personal travel, especially by car - due to the inherent attractiveness of auto travel.

For this reason, one way to reduce traffic growth and congestion would be to assess more of the full cost of travel to the traveler.

The appropriateness of full-cost strategies will be assessed through an extensive public discussion as part of the Boulder Congestion Relief Project. At the same time, the City will initiate a targeted program of demand management measures during the first two years of TMP implementation.

It is important to acknowledge that the City's incentive-based approach to demand management (GO Boulder activities, Eco Pass, bicycle improvements, the HOP) has been a success, reducing single-occupant vehicle travel significantly in the five years since the original TMP was adopted. These successes provide a basis for further effort and provide clues to what will work in Boulder.

Another point to stress is the fact that demand management programs work best if pursued in a "partnership" manner, building on relationships with public and private sector entities. This approach is described in more detail later. Figure 6-35 outlines demand management program elements which, taken together, might prove sufficient to continue a shift in travel behavior away from single-occupant travel over the next two years.

This short list of measures was derived from a much longer list of demand management

measures based on yield in terms of single-occupant vehicle travel. This list also reflects a concept stressed by the Transportation Advisory Board: if the public is to accept demand management measures there must be a perceived sense of benefit or "value gained" to go along with the perceived negative effects. A brief description of each element follows:

public and private parking pricing

The cost to the user of parking an auto in the commercial areas of Boulder is now held below true cost. Public parking prices are set based on a range of policies and issues. Private supply for employees and shoppers is underpriced for competitive business reasons.

Over the next two years, the City will seek opportunities to level the playing field for public and private parking. A variety of parking options will be considered, including: charging for parking seven days a week, charging for higher short-term rates to encourage turnover, charging on Saturdays, expanding metered parking areas, increasing fines for parking tickets, exploring the potential for parking pricing according to proximity to the downtown core, increasing parking fees in RPP zones, and exploring commuter parking permits in the RPP zones. Any revenues realized as a result of such increases in fees will be dedicated to the transportation funding priorities identified in Chapter 8.

employee parking cash-out

Many employees are provided with free parking by their employers. It is possible under current tax law for employers to "cash-out" this benefit without increasing their own costs and without negatively affecting employees. Instead of providing parking free, employers can charge employees and at the same time provide an equivalent amount of cash or

figure 6-35. key elements of a potential demand management program

element	%*
public & private parking pricing	up to 3%
employee parking cash-out	up to 1%
private parking supply limits	up to 1%
expanded Eco Pass program	up to 3%
improved pedestrian network	up to 2%
completion of bicycle system	up to 2%
target combined impact	up to 6%
* reduction in single-occupant vehicle mode share over 5 years	

credit in a “transportation benefit” (tax-free up to \$65/month). Employees can use this cash or credit to purchase an Eco Pass - or they can carpool, bicycle or walk and pocket the money.

Office parks and employment centers which have implemented various forms of cash-out have achieved trip reductions exceeding 10% - at specific sites. Such a strategy can be implemented as a voluntary measure or can be made mandatory through ordinances.

private parking supply limits

Many cities have implemented parking supply limits. These have taken the form of:

- maximum spaces/unit of built space; or,
- parking supply ceilings in specific areas.

Gradually, as parking shortages increase, commuters find other means of reaching work and other travelers also make adjustments (or choose not to come). Success requires that short-term (customers, clients) parking supply be protected and emphasized while long-term (employee) parking be reduced.

expanded Eco Pass program

Boulder has found the Eco Pass program to be an important tool in increasing transit mode share. Opportunities exist to expand the program, not only to additional employers, but also to new types of target groups. These include new subdivisions, existing neighborhoods, and various educational institutions.

improved pedestrian network

Measures to reduce auto dependency should be balanced with measures to improve alternatives to auto travel. Providing more palatable choices to vehicular tripmaking is an important way to promote mode shift. The highest priority for improvement is the City's pedestrian network (see Section 6.1).

completion of bicycle system

For the same reasons, the City will place high priority on completion of the bicycle system (Section 6.2).

other programs

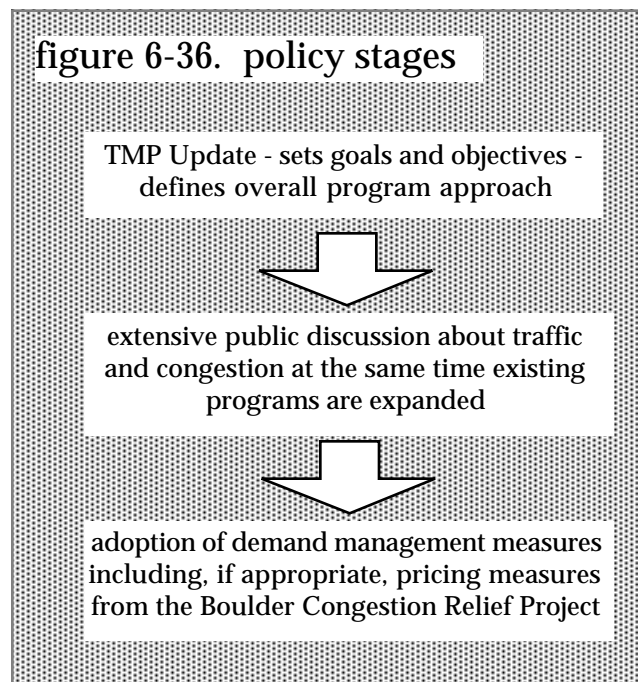
Other transportation programs which will provide a basis for further work include the Residential Parking Permit and Neighborhood Traffic Mitigation programs.

Whatever transportation demand management program options are adopted, it is important to note that the passage of time is a definite challenge to achievement of the objective of preventing growth in traffic.

Traffic growth between now and 2020 will not occur along a straight line. Instead, it is likely that traffic will grow most rapidly during the early years. In other words, the rate of annual traffic growth could be higher in the next ten years than in the fifteen years after that.

For this reason, it is important for Boulder to

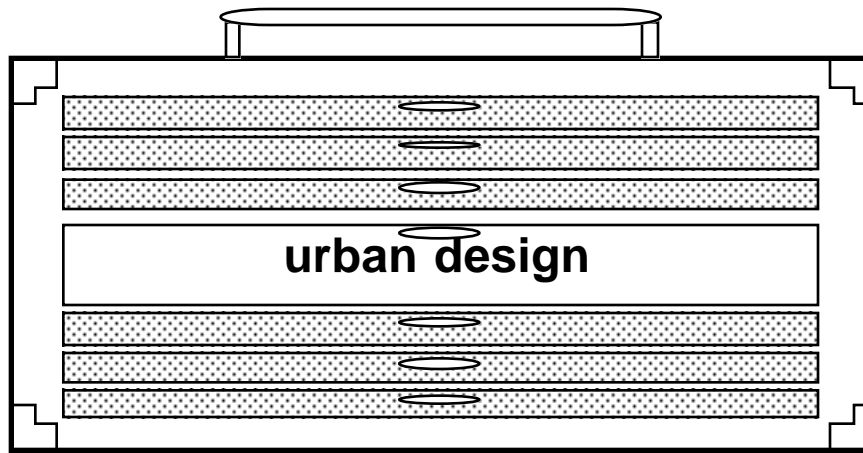
figure 6-36. policy stages



begin now to implement an expanded demand management program.

Figure 6-36 illustrates how the City will approach the process of developing demand management policies over the five years between now and the next TMP Update in the year 2000.

Encouraging and requiring accessible urban



design will be an important strategy in Boulder's travel demand management program.

Accessible design is defined as planning and designing private sites and buildings and public and private infrastructure in a manner that is accessible to pedestrians and bicyclists. (By extension, areas that are accessible to pedestrians are more accessible to transit patrons.) The outcome of accessible design is accessible urban form, and one effect of accessible form is less auto dependency.

Over the past sixty years, Boulder has developed an auto-dependent urban form. Some of the features of this form are single-use land use patterns (especially large, homogeneous residential and commercial areas), assignment of most public space to motor vehicle use, assignment of the highest-value private and public space to motor vehicle parking, and incomplete bicycle and pedestrian systems.

The concept of reducing auto dependence is not

anti-auto. In an ideal Boulder, where a better balance among modes prevailed, not only would there be more alternative modes activity, but the motor vehicle component of the circulation system would function better as well. In an auto-dependent urban form, everyone must drive, even for short trips, clogging the streets and making driving unpleasant.

Issues of cost and affordability are important in Boulder, and reducing auto dependence is taking on increased importance as a cost-of-living containment strategy. Transportation is the second largest category of family expenditure - behind housing but ahead of education, food, clothing and health expenditures.

Also, as the value of real estate continues to climb, the private sector will convert private parking supply to revenue-generating uses, placing pressure on public parking supplies. This rise in value can be accommodated only if auto dependency is reduced.

The City's objectives of shifting trips from autos to other modes can be given an important boost by ensuring that future new development and redevelopment adopts accessible urban design, reducing auto dependence in those areas. As roadway congestion increases, having recourse to other modes will become increasingly valuable.

Most of the transportation infrastructure in Boulder - for all modes - is provided by the existing streets grid. This will continue to be the case in the future, although there will be exceptions to this. In East Boulder, riparian corridors may provide important opportunities for multi-use paths to supplement on-street facilities. And in some sections of the City it may ultimately become desirable to remove

portions of the street network from motor vehicle use, as has been done on the Pearl Street Mall.

However, most of the infrastructure for all modes will be found within the rights-of-way of our existing streets. As a result, this primary circulation system must be planned and designed in a manner that accommodates all modes. That means use of the public right-of-way space must be allocated between modes, and crossings must be provided in a manner that reduces conflicts and enhances safety.

This also requires that speed differentials between modes be managed, and that barriers and obstacles be deployed strategically rather than created inadvertently.

The circulation system must extend seamlessly into private sites. The trend in site layout and design is insular - protecting the project from the world around it. This is perceived as increasing value of the land, but results in islands of inaccessible development.

One primary cause of auto dependency is increasing average trip lengths.

Most pedestrian trips are less than a mile in length. While some residents may bicycle anywhere under any conditions, most people will use bicycles more for trips of two or three miles than they will for trips of five to ten miles.

In Boulder, average trip lengths are growing steadily. The average trip (all modes) made by Boulder residents is 20% longer today than it was in 1990, and the average work commute trip (again, all modes) is 17% longer. Some of this trend is attributable to increased regional trip making, something that probably cannot be influenced greatly by local urban design. However, some of the trend is due to increasing segregation of land uses and separation of origins from destinations.

A key strategy in reducing auto dependence and

single-occupant driving in particular is encouraging development patterns which offer a mixture of uses in close proximity to one another. This applies to new development and to redevelopment areas.

Development patterns which offer a mixture of uses will tend to reduce auto dependency and increase walking, biking and transit. This occurs not so much because people live close to their jobs, although that is one desirable outcome. More importantly, however, people living in development areas which offer a mixture of uses in close proximity to each other will be less dependent on autos for the discretionary trips which make up the majority of daily travel in Boulder. These include shopping, recreation, school and other trips.

The travel environment required for alternative modes (bike, walk, transit) is different than those required for auto travel.

Both pedestrians and bicyclists are quite sensitive to distance and directness of travel. Pedestrians and bicyclists will defy convoluted engineering designs in favor of direct routes, regardless of safety and in spite of barriers. The better strategy is not to force pedestrians and bicyclists to travel where planners and engineers intended, but to provide non-motorized facilities where pedestrians and bicyclists will travel.

Automobiles with their comfortably-seated drivers can go out of their way some distance to reach parking spaces without great inconvenience. Yet we design our projects with the parking in front and then weave sidewalks through the site as space allows (if at all).

Pedestrians and bicyclists are also inherently vulnerable. Slow moving and made of flesh and bone, they compete poorly with motor vehicles for public space.

This is clearly true on our major arterials, but it

is also true in our parking lots and commercial site entrances.

Finally, transit riders have special needs. Inherent to transit travel is pedestrian travel (every transit trip entails at least two pedestrian trips). Transit systems without direct connections to pedestrian systems are unusable. Transit riders also must wait for buses, and as a result require safe and comfortable wait areas. Many of these needs can be met at low cost through careful design.

Accessible urban design can be described in terms of a list of specific elements including:

1. building orientation

Buildings should be located on that portion of the site closest to the external circulation system and building entrances should be oriented to the exterior of the site.

2. circulation grid

The circulation system should be laid out in a fine-grained grid to maximize parallel circulation opportunities, to improve accessibility and to minimize walk distances.

3. circulation system continuity

The circulation grid should be continuous throughout the city. Enclaves and discontinuities in the circulation grid should be avoided in new development and redevelopment, and eliminated wherever possible in existing development. Discontinuities in a fine-grained non-motorized grid should not be permitted.

4. vehicle parking orientation

On-site parking should be placed on that portion of the site farthest away from the external circulation system.

5. vehicle parking supply

Parking supplies should be governed by both maximum and minimum requirements. Maximum limits should not be subject to variance and should be based on mode share objectives. Minimum requirements could be negotiable based on credits and incentives and should provide credit for shared use.

6. vehicle parking allocation

On-street parking plays an important role but should be reserved for short-term use and should not be counted toward minimum supply requirements. Off-street parking should be planned and designed to maximize shared-use opportunities. A program for segregating short-term and long-term parking should be described as part of the site plan and adherence to this program should be a condition of approval.

7. internal pedestrian circulation

Commercial, public, and multi-unit residential sites should provide direct, safe and convenient internal pedestrian circulation oriented along the line of sight from external connections to building entrances and other on-site destinations. Vehicular parking facilities of more than 25 spaces should provide safe and direct pedestrian circulation through the parking facility in protected space that is separate from vehicular lanes.

8. pedestrian buffers

Pedestrian facilities adjacent to connector and arterial streets should be separated from the traveled way of such streets by an appropriate buffer (all land uses).

9. external pedestrian circulation

The internal pedestrian circulation system should be directly and completely connected to the external circulation grid no later than the date of occupancy (all land uses).

10. pedestrian connections between sites

Where more direct pedestrian connections between adjacent sites than those available via the external circulation system could be made by direct connections at the sides and backs of sites, they should be required (commercial, public, mixed and multi-unit residential uses).

11. managing conflict points

On-site conflict points between vehicular and non-vehicular circulation should be avoided; where they occur they should be resolved clearly and positively in favor of non-vehicular circulation through design, signing and enforcement (all land uses).

12. internal bicycle circulation

Commercial, public, development which incorporates a mixture of uses, and multi-unit residential sites should provide direct, safe and convenient internal bicycle circulation oriented along the line of sight from external connections to areas near building entrances and other on-site destinations.

13. external bicycle connections

The internal bicycle circulation system should be directly and completely connected to the external circulation system no later than the date of occupancy (commercial, public, mixed use and multi-unit residential sites).

14. bicycle parking supply

On-site bicycle parking should be provided at a minimum ratio of two bicycle spaces to five motor vehicle spaces and should be of the same type, quality and character as the vehicle parking (commercial, public, mixed use and multi-unit residential sites).

15. public transit access

Access to commercial, public, development which incorporates a mixture of uses, and multi-unit residential sites by public transit should be specifically provided in the site plan and should be located as close as possible to the primary entrances to buildings.

16. intermodal connections

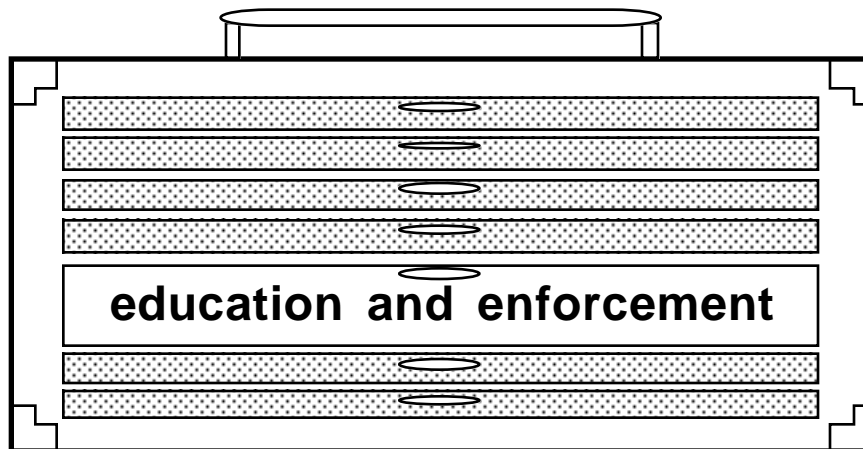
On-site bicycle and pedestrian facilities should be oriented so as to maximize connections to public transit. This includes sidewalks, bicycle lanes, bicycle parking and, most importantly, a dry walkway to the curb.

17. transit access facilities

Transit access facilities (stops, pads, shelters, etc.) appropriate to the size of the project should be required of the developer.

18. quality of the circulation environment

Lighting, security, surfacing materials, landscaping and drainage should be designed to avoid disincentives to non-motorized access and circulation. This will also enhance the attractiveness of the site, adding value over the long term.



education

Educational efforts are fundamental to instill more safe and courteous use of the shared public roadway and to inform the public of the laws regarding the interaction between modes.

The City will continue to work collaboratively with the Boulder Valley School District, the University of Colorado, the Chamber of

Commerce, local businesses, neighborhoods and other community organizations to inform citizens of their rights and responsibilities as cyclists, pedestrians, and motorists, to teach safe bicycling habits, and to increase respect among all modes.

boulder valley school district (BVSD) and youth education

The City currently hosts transportation safety assemblies each fall for students in kindergarten through fifth grade. The general theme of these assemblies is "making safe trips to school." The City also works with community groups to present bicycle safety rodeos which teach safe riding habits and basic rules of the road to young cyclists. In addition, the City will work with the BVSD to further increase educational efforts and provide the following programs:

- a district-wide transportation safety festival each spring for second through fourth grade students. This festival would combine programs on bicycle safety, the alternative transportation system, and a "share the road" campaign;
- district-wide transportation safety assemblies to be held at middle schools and high schools on alternating years; and,
- education and encouragement programs to

As traffic levels increase in Boulder, conflict and frustration levels between all modes continues to grow. In what is becoming a daily battle over use of the shared public roadway, motorists increasingly fail to yield the right-of-way or give adequate space to cyclists and pedestrians. At the same time cyclists more often disregard traffic laws or fail to yield right-of-way or adequate space to pedestrians and pedestrians tend more often to disobey the laws governing their behavior.

What results is a cycle in which a lower level of respect and cooperation among all modes is reflected in a higher level of conflict.

Concerns for the decline in safety for all modes, and the corresponding call for increased enforcement was the most consistent and strongest comment heard from the public meetings held on the TMP Update. Aspects of this comment include the lack of courtesy among all modes, the refusal of motorists to yield to pedestrians on the street, and the blatant disregard of motorists for speed limits and red lights.

In order to improve conditions for all modes, education and enforcement efforts will be closely linked and will form an integral part of the TMP.

figure 6-37. shared use of public right-of-way



help middle and high school students to use alternative transportation. The City will also look for ways to involve high school students in alternate modes education, possibly by instituting a program to involve high school students in providing bicycle education to younger students.

These programs will help ensure that students are taught the correct rules of the road and will help encourage the safe use of alternative modes of transportation. Figure 6-37 demonstrates shared use of the public right-of-way.

the university of colorado (CU)

In conjunction with University Staff, the City Bicycle/Pedestrian Program currently provides safety education materials and bicycle maps during orientation sessions and at mandatory bike registration. Information is also distributed during CU's annual alternative transportation fair. In addition, the City will work with the University of Colorado to institute a mandatory session on bicycle safety, the rules of the road and the "Share the Road" campaign as part of the Orientation Program. With a mandatory program, students will be better informed of their rights and responsibilities as cyclists, pedestrians and motorists and as members of the community.

share the road campaign

The City will develop a strong “Share the Road” outreach program designed to foster increased courtesy, respect and understanding among all modes. This extensive information campaign will be an on-going effort and every possible avenue will be explored to better educate both motorists, cyclists and pedestrians of the need to share the road. The program will include public service announcements, signs, brochures, and other marketing strategies.

The City will collaborate with the Chamber of Commerce, the Boulder Valley School District (BVSD), the Board of Realtors, Boulder Community Hospital and other community groups and organizations to build an effective program to promote behavioral change.

department of motor vehicles

The City is currently working with the State of Colorado to include questions on the appropriate behavior of motorists towards bicyclists and pedestrians as part of the State Motor Vehicle test.

driving with bicyclists

The City is also currently developing a seminar on "Driving with Bicyclists" to better inform automobile drivers on how to share the road with cyclists. The seminar will include slide shows and discussions led by City Bicycle/Pedestrian Program Staff to emphasize the rights and responsibilities of all road users.

Three separate versions of this seminar will be developed and offered at regular intervals. The first version will be designed for the general public. The second version will be a more detailed course designed for professional drivers and all professional drivers hired by local businesses and transit providers will be encouraged to attend. The third version will be a mandatory course for motorists who commit

traffic violations involving cyclists or who are involved in a conflict with a cyclist.

basic bicycling class

The City will also work with the University and City Police Department and the University Bike Program staff to offer courses on “Basic Bicycling Skills” at the University and throughout the Community. These courses will teach basic bicycling skills, the rules of the road, and repair techniques.

enforcement

Enforcement efforts are important to further enhance public safety by providing support for educational programs and ensuring that laws are adhered to.

enforcement approach

The City’s transportation staff will work with the Police Department to develop mutually compatible policies which will be reflected in the Public Safety Master Plan. The City will identify the need for strategic enforcement efforts and will work through the Police Department to implement these.

As part of this process, it will be important to recognize the constraints under which the Police Department works and to determine if the community supports the additional allocation of resources and priority to traffic enforcement.

It will also be important to recognize and perhaps re-evaluate the priorities which the community has previously placed on the Police Department. For example, in the interest of public safety, the Police Department no longer chases in “hot pursuit” unless there has been a clear threat made to an individual’s safety. This means that a patrol officer may be on his way to the scene of a reported burglary without having his sirens on. If that patrol officer is

waiting at an intersection and sees a motorist run a red light, his priority is to continue on to the scene of the burglary. This also means that a patrol officer will not put on his sirens and chase down a vehicle for a traffic offense if he deems that, by doing so, he could potentially cause an accident and harm innocent people.

close call hot line

The “Close Call” Hot Line has been established to help provide additional information on accidents or potential accidents which would otherwise go unreported. Bicycle and Pedestrian Program Staff will use this data to identify high hazard areas and to pinpoint violations which lead to accidents. These areas and issues will be the focus of targeted education campaigns which will be followed by special enforcement effort.

city code and traffic fines

City code regarding bicycle usage and pedestrian right-of-way has been identified as a deterrent to both effective education and enforcement. In many cases, the ordinances regarding pedestrian and cyclist right-of-way use language which is not clearly defined. Bicycle and Pedestrian Program Staff will work with the judicial system to revise the current code to more clearly state the laws which govern pedestrian and cyclist right-of-way and to clear up other issues such as cyclist right-of-way when multi-use path intersect with curb cuts or streets.

The City will actively work to ensure that motorists, cyclists and pedestrians alike are aware of and understand these laws. Educational campaigns, using the media and other means, will be combined with strategic enforcement efforts until the understanding of these laws is reflected in travel behavior. The City will also work with the judicial system to ensure that traffic fines reflect the potential for injury and damage caused by the violation.

police on bicycles program

In addition to other benefits, the Police on Bicycles program provides an important opportunity to sensitize the Police Department to bicycling and pedestrian issues and to help foster respect from motorists towards cyclists and pedestrians.

The City will work through its Police Department to expand the Police on Bicycles program so that every police officer in the traffic division can be rotated through the program for some period of time. The program will also be expanded to include educational and encouragement efforts.

bicycle violators seminar

A Bicycle Violator's Seminar is currently offered on a monthly basis as an alternative to paying full fines charged to bicyclists for traffic violations. Participants are taught the rules of the road through a combination of lectures, slide shows and testing.

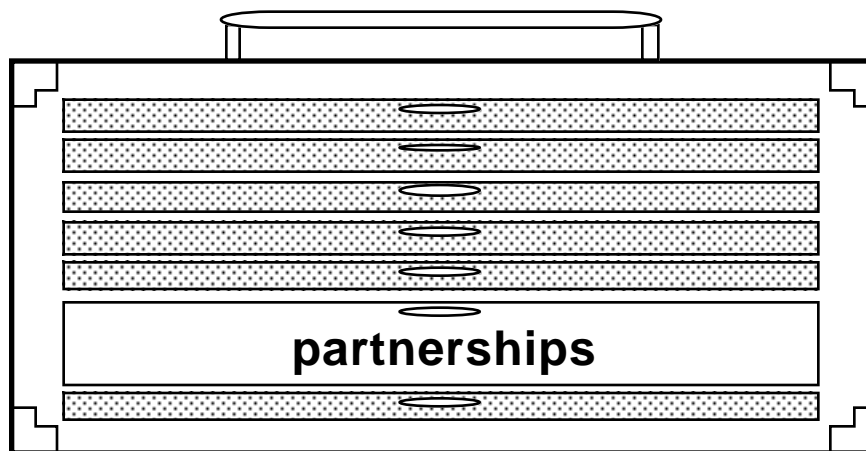
photo-radar

Photo-radar has been consistently identified by the bicycling community as a potential tool for increasing enforcement of posted speed limits.

Photo-radar involves the use of cameras which detect speeding drivers and photograph either the license plate or the driver, or both in the cases where two cameras are used. A ticket would then be sent to the owner of the offending vehicle along with attached photographs.

The Police Department has been investigating the potential use of photo-radar as a speed enforcement tool in Boulder. The Department has determined that there are a number of problems associated with the use of photo-radar and that these would need to be resolved before photo-radar could be used in Boulder.

The City will work to develop partnerships with businesses and other organizations to



address transportation issues and work towards innovative solutions.

Partnerships with businesses will focus on expanding programs proven successful in the downtown area to other areas of town. The packaged combination of pricing parking and controlling supply, improving transit service, providing Eco Passes to all employees, and promoting alternative mode use through a variety of education and promotional activities has produced the highest alternative mode use in the City, while maintaining the economic position of the downtown.

The Downtown Management Commission (DMC) which initiated and implemented these programs is an example of a successful partnership forged between the City and private business. The DMC has recently combined efforts with the University Hill Central Improvement District (UHCID) to help bring similar programs to the University Hill area.

In addition, the City has initiated partnerships with the University of Colorado (CU) and the Boulder Valley School District (BVSD). The aspects of these partnerships which relate to demand management are discussed below.

downtown TDM program

In the 1992 Central Area General Improvement District (CAGID) Parking Study, the City Council directed the downtown/CAGID to pursue a program of Travel Demand Managements targeted specifically toward downtown employees. The program included hiring a Downtown Employee Transportation Coordinator to manage and implement these programs and

establishing a Downtown Transportation Access Monitoring Committee.

The Monitoring Committee was established in 1994 and is comprised of representatives from a variety of downtown components. The role of the Monitoring Committee is to:

- prioritize the travel demand management programs, establishing realistic goals and encouraging their successful implementation;
- examine monitoring options, criteria, and techniques. Develop credible, statistically accurate and comprehensive methodology for monitoring all transportation access modes, acceptable to all parties; and,
- based on the data, develop strategic management policy recommendations for transportation access issues.

In developing these programs, the Monitoring Committee has taken into consideration the target market of the downtown employee and understands there are a variety of options. The Monitoring Committee also sees the need to stay in tune with the changes in the downtown in order to stay responsive to the employees' needs to keep the programs progressive.

The approach to the design of the program is a

comprehensive one that looks at the interrelatedness of parking and alternative modes as well as the cost effectiveness of each program. As employees chose these alternate mode options to travel to work, this frees up short-term parking for the customer and is beneficial to the downtown businesses.

Committee is shown in figure 6-38.

The 1995 Downtown Employee Travel Survey showed that 41% of the downtown employees surveyed either took the bus, carpooled, walked or rode their bicycles as their most frequent travel mode.

The TDM program designed by the Monitoring

A CAGID study on Parking and Alternative

figure 6-38. Downtown TDM Program

- 1) **Bicycle Parking Facilities** - Encourage the use of bicycles for work trips by providing convenient and secure parking facilities. Provide education about available facilities.
- 2) **Eco Pass** - Encourage transit use with a regional bus pass, guaranteed ride home and education about the program.
- 3) **Flex-Permit Parking Program** - Encourage permit holders to choose an alternative mode of transportation to work one to three days per week by allowing them to purchase permits at a pro-rated cost for two, three or four days per week.
- 4) **HOP Shuttle Bus** - Educate about the new shuttle and encourage the use of alternative modes to work by reducing the need for a car for errands during the day and as a means to coordinate with carpools and other transit routes.
- 5) **Carpool Strategy** - Encourage the use of carpools in city parking structures or by business owners with a reduced cost to participants and/or more convenient parking.
- 6) **Remote Parking and Shuttle** - Provide a remote parking lot to downtown employees in conjunction with the HOP shuttle which will transport them to their worksite without having to drive.
- 7) **Downtown Employee Transportation Handbook** - Create a resource for both employer and employee to increase awareness of the transportation options and programs available to the downtown employee.

Transportation assigned the downtown TDM measures Parking Space Equivalents (PSEs) according to how many parking spaces it was estimated that each TDM measure was worth.

The study found that TDM measures (the Eco Pass program, Carpool Permits, the HOP Shuttle, and improved bicycle facilities) accounted for around 720 to 755 PSEs in 1994. Based on the continued use of existing TDM programs, on the expansion and refinement of existing programs and the institution of new programs, the study projected that TDM measures would account for around 1,060-1,165 PSEs in 1999.

The parking garage at 1100 Walnut Street has 273 parking spaces. This means that TDM measures implemented in the downtown have reduced the need for parking by nearly three times as many parking spaces as are in the 1100 Walnut Street parking garage. By 1999, they are projected to reduce the need for parking by the equivalent of around four parking garages of similar size.

university hill general improvement district (UHGID)

The University Hill General Improvement District (UHGID) has recently joined forces with the Central Area General Improvement District (CAGID) and the DMC to initiate demand management programs in the University Hill area.

boulder valley regional center (BVRC)

The Boulder Valley Regional Center (BVRC) is currently working to update its Design Guidelines. The BVRC area includes Crossroads Mall as well as the surrounding shopping areas, which have all been broken into their own subareas. Traditionally, these subareas have been viewed as independent entities, and the existing guidelines do not address connections between these subareas.

This means that TDM measures implemented in the downtown have reduced the need for parking by nearly three times as many parking spaces as are in the 1100 Walnut Street parking garage. By 1999, they are projected to reduce the need for parking by the equivalent of around four parking garages of similar size.

The updated guidelines will reassess the circulation through these sub-areas and be expanded in scope to include connections between the various sub-areas. The focus will be on providing (and encouraging) access into and between the BVRC

sub-areas by non-motorized traffic, which includes bicycles, wheelchairs, and pedestrians.

The guidelines address architectural form and details, site design, landscaping, street character, access, parking, open space and auto, bike and pedestrian connections.

The City will work with the BVRC to improve bicycle and pedestrian access to the BVRC, to increase transit service to the BVRC area, and to develop demand management programs for this area.

the university of colorado (CU)

During the summer of 1994, the City/University Steering Committee agreed to begin discussion on the issue of transportation. Staff members from the City and University met to discuss areas of cooperation, potential conflicts, and key issues of mutual interest. In

December, 1994 these issues were discussed by the Steering Committee along with the issue of student enrollment growth and a review of the City's Transportation Master Plan.

In April 1995, a joint planning meeting was held between City and University officials to address specific goals, priorities, and action plans on transportation.

The proposed demand management programs which were discussed included:

- review of the pricing policies for parking at CU and in City lots;
- exploration of alternative funding for The Hop, Night Hop, and shuttles;
- establishing a faculty/staff Eco Pass program;
- completing missing links in bicycle and pedestrian facilities;
- developing long-term plans for parking at the University and within the City;
- giving consideration to shared access for parking facilities and consolidation of spaces wherever possible to increase land availability for other things;
- communicating development of the Residential Parking Permit Program to CU; and,
- sharing knowledge about computerized permit cards, universal transportation/transit cards, and SMART parking.

The City will continue to work with CU to develop a "seamless" transportation system which flows smoothly between the University and the City.

boulder valley school district (BVSD)

Educating and introducing students to transportation options and the impacts of personal transportation choices on the community will provide the basic building blocks of the future.

Today's students are tomorrow's employees, parents, decision-makers and leaders. In fact, the children who are in grade school today will be parents and adult drivers by the horizon year of this Plan - 2020. Providing these important people with a foundation of knowledge and experience about transportation choices will result in a population knowingly making choices that work for themselves and their community's goals.

Developing a partnership between the City of Boulder and the BVSD will raise mutually-held transportation policies and programs to a higher priority for both organizations. The City and BVSD will jointly advance the students' and district's contributions to improving the larger community's goals including transportation. The City will also work to coordinate with the BVSD to reduce school-based travel.

The City of Boulder has had some success with the BVSD developing programs that promote alternative transportation with students. For example, through a cooperative working relationship between the BVSD, GO Boulder and RTD, students at Boulder High School, New Vista High School and the middle school section of the New Horizon School had Eco Pass-type bus passes providing unlimited use of the Boulder local system and reduced rates on regional services.

However, the pass program has been reduced due to budget constraints. The New Vista and New Horizon programs have been continued because of parent interest, but the Boulder High School student pass has been discontinued.

City staff are participating in the BVSD's

Transportation Review Board (TRB) which has been convened for the 1995-96 school year. The TRB will look at a range of transportation issues facing the BVSD including the use of "alternative sources of transportation such as RTD, private carriers and partnerships." Additional demand management programs which the City will work with BVSD to implement include:

- expansion of unlimited use bus passes (like the ECO Pass) for middle school and high school students;
- provision of ECO Passes for faculty and staff;
- integration of alternative transportation goals and concepts into the curricula;
- consideration of parking management programs for students, faculty and staff;
- provision of bike parking, good sidewalk connections and street crossings that encourage safe bicycling and walking for students, faculty and staff; and,
- continuation and expansion of programs that educate students about safe walking and bicycling.

the US 36 corridor study

The US 36 Corridor

Study serves as one example in which the City of Boulder has worked to establish a regional partnership in order to address the difficult transportation issues which the region faces.

The purpose of the US 36 Corridor Study was to explore regional opportunities for improving mobility and reducing congestion along the corridor from I-25 to Baseline Road in Boulder.

The study produced policy level recommendations for short and long term strategies and implementation mechanisms within a six month period of intense activity.

Recommendations were developed for highway, transit, pedestrian, bicycle, demand management and land use which would be

figure 6-39. US 36 regional roundtable: general areas of consensus

- In the future, there needs to be a legitimate alternative, or alternatives, to travel in single occupant vehicles.
- Short-term actions need to be identified, but a longer-term vision also needs to be defined. This should include such long-term strategies as education and development of personal responsibility for travel decisions.
- Only a mix of strategies makes sense - no one recommendation will respond to the problems and needs in the corridor. Intra- and inter-urban strategies are both needed.
- Traditional public funding alone is insufficient. Responsibility for planning, implementation and funding needs to be shared by public and private entities.
- Some of the strategies which are the most effective in terms of reducing vehicle miles of travel (VMT) also are likely to be the least popular and most difficult to implement. Thus, voluntary demand management strategies are preferred over mandatory.
- Shared responsibility is essential. No one municipality should bear a major cost burden and sharing of revenues should be explored.

effective at addressing corridor problems.

To tackle this complex task, members of all municipalities, counties, chambers and economic development organizations with a relationship to the corridor were invited to participate in a “Regional Roundtable.”

Major developers of property along the corridor were also included in the process, along with the public sector agencies responsible for planning, maintenance and operation of the corridor.

The process was designed to be consensus based. Participants were asked to move forward for recommendation only those strategies on which there was group agreement or accord.

A number of general areas of agreement were determined and several recommendations were made as to how to improve transit, bicycle and pedestrian facilities along the corridor and support use of these facilities through demand management techniques and land use and site design measures.

General areas of consensus are shown in figure 6-39 on the previous page. Strategies identified as having consensus support include the following:

- ultimately build High Occupancy Vehicle Lanes (HOV)/ Bus Lanes in both directions from I-25 to Boulder;
- improve park ‘n’ Rides to support existing and new demands;
- improve bus service on and adjacent to the corridor;
- improve targeted interchanges and arterials to make them more usable for all modes;
- improve pedestrian and bicycle facilities;
- conduct a toll road feasibility study;

- preserve options and right-of-way for future transit;
- organize corridor employees and other trip generators to share information, support education programs, and implement demand management measures;
- encourage private and public sector representatives to use land use and site design measures that will support access to transit and other modes; and,
- investigate new revenue sources.

The next steps will involve the development of an Intergovernmental Agreement in order to evaluate, adopt and implement study recommendations on a regional basis.

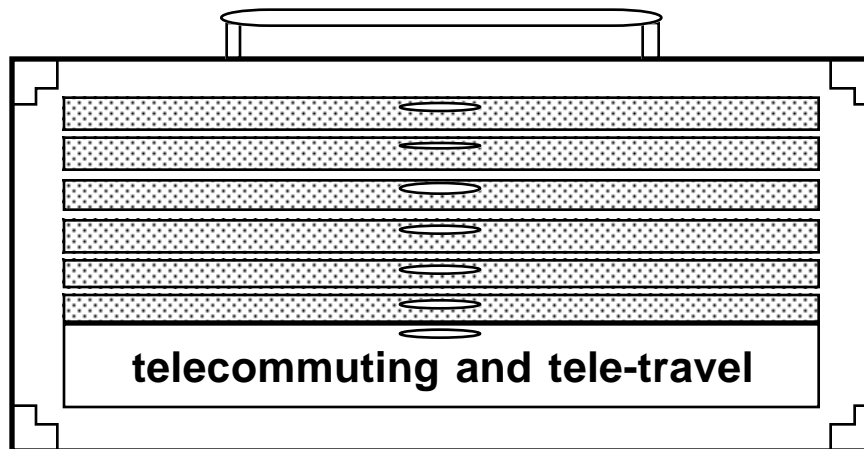
One outcome of the US 36 study, which may not currently enjoy regional consensus but which is a direction City of Boulder staff felt should be pursued further, is the re-introduction of tolls on US 36.

Creating a new high-occupancy vehicle (HOV) “buy-in” lane, where HOVs can travel free, but SOV drivers must pay a fare, is a possible strategy for this corridor. The existing lanes would remain free under this approach.

business partnerships

The City will work to expand partnerships with business in two principle areas:

1. Expanding programs proven successful in the downtown area to other commercial areas of town.



The shift that may result from such technologies could be significant for some types of trips and will be integrated with transportation and land use policy.

Opportunities now exist for trip avoidance through telecommuting and teleshopping and through on-line rideshare coordination.

2. To explore telecommunications and determine how the City can help private or non-profit companies develop the technological strategies to reduce congestion and SOV travel.

In addition to the programs and approaches described in this section, technology offers further potential for vehicle trip reduction.

Some portion of the required shift in SOV travel may come about through the substitution of telecommunications technology for trip making. In other words, person trips could be avoided entirely.

In most cases, travel is a derived demand, undertaken to access the variety of services and opportunities associated with modern life. Greater affluence and two income families have greatly increased the number of non-work trips, with entire classes of travel such as by-day auto rental and video rental largely nonexistent ten or twenty years ago.

Existing or proposed technological approaches such as telecommuting, on demand cable programming, electronic banking, video conferencing and others have the potential to replace or reduce the need for a variety of trips while still providing for the primary needs.

Telecommuting occurs where employees work at home or in “tele-centers” close to their homes. Variations on this theme include a range of teleconferencing programs and other more exotic approaches like the Swedish work train where workers start their day in a passenger train equipped like an office complex.

The potential of tele-centers for improving air quality has been examined in the Foothills Congestion Management Project by the City, and a number of these centers as well as video conferencing facilities exist across the country.

The various telecommuting programs that have been implemented in the US over the past decade have met with somewhat mixed success. Estimates of trip savings for the work commute range from one to two percent. However, there is evidence that increased tripmaking for other purposes may cancel out some of this savings.

delivery services

Some Boulder retailers, especially grocery stores, already offer teleshopping services. Customers call and place orders over the telephone and the retailer later delivers the order. Originally a service made available for elderly people and others who cannot drive, teleshopping has potential as a broader trip-reduction program.

The City is investigating strategies for increasing the availability of delivery services, not just to support telecommuting, but as a general travel avoidance tool.

To some extent, catalog shopping may be seen as also belonging in this category since it too theoretically could reduce vehicle trips.

Finally, the growth and popularity of on-line computer bulletin board services may make possible a new type of ridesharing coordination at the neighborhood level. Parents shuttling children to school, family shopping trips, and trips for recreational purposes are candidates for ridesharing initiated by on-line messaging and related approaches.

The City of Boulder will continue to investigate tele-travel strategies as potential trip-reduction measures. Specifically, the potential telecommunications contribution to SOV mode shift will be explored as one of many strategies examined in the Congestion Relief Study.

New cable and fiber-optic infrastructure will be installed throughout Boulder in coming years as part of the ongoing revolution in communications technology, and communications and entertainment service provision.

The City will challenge itself to find new opportunities to meet its transportation goals in part through strategic utilization of this new infrastructure.